

09/966,863 filed 09/28/2001
Wolk, et al.
Reply to Final Office Action of August 12, 2005

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (currently amended) A method of fabricating a microfluidic device, comprising:
providing a first substrate layer having a top and a bottom surface;
fabricating an alignment structure in ~~a~~ the top or bottom surface of the first substrate layer;
aligning a tool with the alignment structure; ~~and~~
forming an aperture ~~in~~ through the first substrate layer with the tool;
providing a second substrate layer having a top and a bottom surface;
forming an aperture in the top surface of the second substrate layer, the aperture in the
second substrate layer being larger than the aperture in the first substrate layer; and
mating the second substrate layer with the first substrate layer such that the aperture
through the first substrate layer is completely within the boundaries of the aperture in the second
substrate layer when the first and second substrate layers are mated together.
2. (currently amended) The method of claim 1, wherein the first substrate layer
comprises a silica-based substrate and the alignment structure is etched into ~~a first~~ the top or bottom
surface of the first substrate.
3. (withdrawn) The method of claim 1, wherein the first substrate layer comprises a
polymeric substrate and the alignment structure is embossed onto the first surface of the first
substrate.
4. (withdrawn) The method of claim 1, wherein the first substrate comprises a
polymeric substrate and the alignment structure is injection molded onto the first surface of the first
substrate.
5. (previously presented) The method of claim 1, wherein the tool comprises a drill.
6. (currently amended) The method of claim 1, wherein the aperture in the first
substrate layer is configured to receive a capillary element.

09/966,863 filed 09/28/2001

Wolk, et al.

Reply to Final Office Action of August 12, 2005

7. (canceled)

8. (canceled)

9. (currently amended) The method of claim ~~7~~ 1, wherein a capillary element is inserted into the aperture in the first substrate layer when the first and second substrate layers are mated.

10. (withdrawn) A method of fabricating a multilayered microfluidic device, comprising:

providing a first notch in the edge of a first substrate layer;

providing a second notch in the edge of a second substrate layer, the first and second notches being positioned so that the first and second notches circumscribe a single opening when the first and second substrate layers are mated together;

inserting an alignment key into the single opening, the alignment key being configured to fit into the single opening when the first and second substrate layers are mated together and aligned in a first relative position; and

mating and bonding the first substrate layer to the second substrate layer in the first relative position.

11. (withdrawn) The method of claim 10, wherein the first and second notches are rectangular.

12. (withdrawn) The method of claim 11, wherein the one of the first and second substrate layers comprises a groove fabricated into a surface thereof, the groove terminating in one of the first or second notches, and wherein the alignment key comprises a capillary element.

13. (withdrawn) The method of claim 11, wherein the capillary element comprises a rectangular capillary having a capillary channel disposed therethrough.

14. (canceled)